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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Joseph P. Rynd

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OWENS CORNING
2790 COLUMBUS ROAD
GRANVILLE, OH 43023

EXAMINER

WOLLSCHLAGER, JEFFREY MICHAEL

ART UNIT

PAPER NUMBER

1791

NOTIFICATION DATE

DELIVERY MODE

05/17/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USIPDEPT@owenscorning.com

Office Action Summary	Application No. 10/722,929	Applicant(s) RYND ET AL.	
	Examiner JEFFREY WOLLSCHLAGER	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-15 and 27-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-15, and 27-36 is/are rejected.
- 7) ☒ Claim(s) 10, 11 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 5, 2010 has been entered.

Claim Objections

Claim 10, 11 and 13 are objected to because of the following informalities: claims 10, 11 and 13 recite "the nano-particles" while claim 1 recites "the nano-particle nucleating agents". For consistency, the recitation in claims 10, 11 and 13 should be changed to match that of claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 28 recites the cell size is from "several tens of microns to several hundred microns". The limiting effect of the recitation is unclear. It is unclear what cell size values are intended to be included near the upper and lower ends of the recited range. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 27-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US 6,759,446) in view of Fukushima et al. (Graphite Nanoplatelets as Multifunctional Reinforcements of Polymer Composites, IDS document).

Regarding claims 27-36, Lee et al. teach the basic claimed process of producing a foam product comprising incorporating a nanocomposite, such as a nanoclay, into a polystyrene (col. 2, lines 25-65); incorporating a blowing agent under a first pressure and temperature and extruding the melt under a second pressure and temperature to produce a foam having a cell size of less than about 20 microns (col. 5, lines 54-col. 6, line 31; col. 3, lines 30-35). Lee et al. do not teach employment of nano-graphite as claimed. However, Fukushima et al. teach a method wherein graphite nanoplatelets are employed as a replacement of nanoclays (Abstract; Introduction; table 1) at values of 0-20% by volume (Figure 3A and 3B). It is noted that 0-20% by volume creates a substantially overlapping range with 0.01 -10% by weight.

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Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Lee and to have employed nano-graphite, as suggested by Fukushima et al. for the purpose of realizing desired product properties and while employing a material that is disclosed by Fukushima et al. as being suited for “the same nanoreinforcement concept” (Introduction). Further, it is noted that while Fukushima et al. do not explicitly recite that the nano-graphite material is a “nucleating agent”, the combination suggests employment of the same claimed materials in the same claimed manner.

Claims 1-8, 10-15 and 27-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudhary et al. (US 6,355,341) in view of any one of Fukushima et al. (Graphite Nanoplatelets as Multifunctional Reinforcements of Polymer Composites, IDS document) or Chen et al. (Dispersion of Nanosheets in a Polymer Matrix and the Conducting Property of the Nanocomposites, IDS document) or Jang et al. (US 7,071,258) or Glicksman et al. (US 5,010,112).

Regarding claims 1-8, 10-15 and 27-36, Chaudhary et al. teach the basic claimed process of producing a foam comprising blending molten polystyrene and a blowing agent and extruding the mixture through a die to form the foam product (Abstract; col. 1, lines 16-45; col. 2, lines 59-col. 3, line 30; col. 9, lines 27-col. 10, line 46) Additionally, the foam employs various fillers and also suggests additives such as graphite (col. 2, lines 11-14; col. 3, line 24; col. 13, lines 10-18; claim 2 and claim 4) Chaudhary et al. to not disclose the particle size of the employed graphite. However, Fukushima et al. teach a method wherein graphite nanoplatelets are employed as a filler (Abstract; Introduction; table 1) at values of 0-20% by volume (Figure 3A and 3B); Chen et al. teach that graphite in the form of a nanosheet is effective for improving

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the mechanical properties of the polymer matrix (Abstract; Introduction; Experimental; Mechanical Properties); Jang et al. teach that graphite in the form of nano-scaled plates is suited for utilization in polymeric matrix materials (Abstract; Figure 1; col. 8, lines 10-17) and Glicksman et al. teach flakes coated with a thin layer/sheet of graphite having a thickness of one or more orders of magnitude less than a micron is effective at improving the properties of a foam material (Abstract; col. 2, lines 10-62).

Further, it is noted that the claims do not exclude all other nucleating materials besides the claimed graphites as long as the graphites are the only “nano” nucleating agents. It is also noted that while the secondary references do not explicitly recite that the nano-graphite material is a “nucleating agent”, the combination suggests employment of the same claimed materials in the same claimed manner.

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have combined the teaching of Chaudhary et al. with any one of Fukushima et al, or Chen et al., or Jang et al. or Glicksman et al. and to have utilized the graphite material of any one of Fukushima et al, or Chen et al., or Jang et al. or Glicksman et al. for the purpose of utilizing art recognized graphite materials known to be suited for use in a polymeric matrices in order to reinforce and improve the properties of the final product.

Claims 1-8, 10-15 and 27-32 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shmidt et al. (US 5,674,916) in view of any one of Fukushima et al. (Graphite Nanoplatelets as Multifunctional Reinforcements of Polymer Composites, IDS document) or Chen et al. (Dispersion of Nanosheets in a Polymer Matrix and the Conducting Property of the Nanocomposites, IDS document) or Jang et al. (US 7,071,258) or Glicksman et al. (US 5,010,112).

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Regarding claims 1-8, 10-15 and 27-32 and 34-36, Shmidt et al. teach the basic claimed process of producing a foam having a cell size of 70 micrometers or less (Abstract) comprising blending molten polystyrene (col. 1, line 50-col. 2, line 27) and a blowing agent (col. 3, lines 14-42) and extruding the mixture through a die to form the foam product (col. 4, lines 22-48). Additionally, the foam employs from about 4 to 10% by weight of an infrared attenuating filler, such as graphite (col. 5, lines 44-55), to enhance the products performance. Further, it is noted that the graphite provides additional nucleating action (col. 5, lines 50-67). Shmidt et al. do not disclose the particle size of the employed graphite. However, Fukushima et al. teach a method wherein graphite nanoplatelets are employed as a filler (Abstract; Introduction; table 1) at values of 0-20% by volume (Figure 3A and 3B); Chen et al. teach that graphite in the form of a nanosheet is effective for improving the mechanical properties of the polymer matrix (Abstract; Introduction; Experimental; Mechanical Properties); Jang et al. teach that graphite in the form of nano-scaled plates is suited for utilization polymeric matrix materials (Abstract; Figure 1; col. 8, lines 10-17) and Glicksman et al. teach flakes coated with a thin layer/sheet of graphite having a thickness of one or more orders of magnitude less than a micron is effective at improving the properties of a foam material (Abstract; col. 2, lines 10-62).

Further, it is noted that the claims do not exclude all other nucleating materials besides the claimed graphites as long as the graphites are the only “nano” nucleating agents. It is also noted that while the secondary references do not explicitly recite that the nano-graphite material is a “nucleating agent”, the combination suggests employment of the same claimed materials in the same claimed manner.

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have combined the teaching of Shmidt et al. with any one of Fukushima et al, or Chen et al., or Jang et al. or Glicksman et al. and to have utilized the

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graphite material of any one of Fukushima et al, or Chen et al., or Jang et al. or Glicksman et al. for the purpose of utilizing art recognized graphite materials known in to be suited for use in a polymeric matrices.

It is noted that claim 33 is not rejected over Shmidt et al. since Shmidt et al. is directed to an open celled foam product.

Response to Arguments

Applicant's arguments filed April 5, 2010 have been fully considered, but are moot in view of the new grounds of rejection necessitated by the amendment to the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY WOLLSCHLAGER whose telephone number is (571)272-8937. The examiner can normally be reached on Monday - Thursday 6:45 - 4:15, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Wollschlager/
Primary Examiner
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May 13, 2010